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SUBJECT: DRC/ZAMBIA COPPER BELT - EQUINOX'S GIANT LUMWANA
COPPER/URANIUM PROJECT

REF: A) LUSAKA 344
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¶1. (U) This cable represents one of a series of DRC/Zambian copperbelt mine-specific reports emanating from a ground-breaking resource-reporting and commercial advocacy collaboration between Embassies Pretoria, Kinshasa, and Lusaka.

¶2. (SBU) SUMMARY: North-western Zambia's Lumwana Mine is noteworthy because of its remoteness from the "traditional" Copperbelt with its high grade copper and cobalt ores, and for its very large but low-grade copper reserves and resource base. Discrete younger deposits of uranium are intimately associated with the copper and will be selectively mined and stockpiled until the uranium plant is completed in mid-2010. This mineral association is fairly unique and comparable with Shinkolobwe in the DRC (source of the "Manhattan Project") and Olympic Dam in Australia. The mine is currently in the final stages of development and first production of first copper concentrate is targeted for September 2008. This schedule has not been significantly affected by the power cut-offs and shortages plaguing Zambia. When in full production next year, Lumwana will be the biggest surface operation and copper-producer in Africa, twentieth largest copper producer in the world, and will add 35 percent to Zambia's copper output. Total estimated capital cost of the project is about \$800 million, which is the largest investment ever made in Zambia. Mine life is estimated to be 37 years, but known mineralization is extensive and production could continue far beyond that time. Lumwana is wholly owned and operated by Equinox Minerals of Australia, which is listed on both the Australian and Toronto stock exchanges.

¶3. (SBU) The remoteness of the mine and its potential long life have necessitated that management take a long-term view of its need for skills, social amenities, and the provision of infrastructure and utilities. As such, a wholly new town is being constructed with recreation and shopping facilities, housing, schooling, and extensive training opportunities for local employees, most of whom

have no mining or industrial experience. Five-year off-take contracts are in place with two local smelters for the mine's total output of copper concentrate. In April the Zambian government unilaterally imposed a new tax regime that could have negative repercussions on new investment decisions. Lumwana management is confident that the project will continue as planned and that the GRZ will take cognizance of the unintended consequences of the new tax and concerns expressed by the mining industry. End Summary.

14. (SBU) Embassy Pretoria Mining/Energy Officer and Specialist visited mines on both sides of the DRC/Zambia copper belt May 12-23 to assess developments in the sector, covering six mines in the DRC and four in Zambia. Septel provides an executive summary of developments on both sides of the border of the copper-cobalt belt. Supplementary septels on other mines and issues will follow. Companies were helpful in supporting the well-received visits. Embassy Pretoria Mining/Energy Officer and Specialist and Lusaka Commercial Specialist visited Equinox's Lumwana Mine in north-west Zambia on May 19. Managing Director Harry Michael hosted the team and took great pride in showing off his \$165-million mining fleet of gigantic trucks, excavators, and shovels. Most of the facilities visited are still under construction, but the team was shown the \$408-million processing plant that will include the largest grinding mills in the world, the new village to house 1,200 employees, the school for 2,000 children, and the shopping center that will normalize family life. The remoteness of the mine requires that Lumwana town provide most amenities in order to attract experienced people and families.

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The Central African Copperbelt - a Treasure Trove

15. (SBU) The Zambian/DRC copperbelt and extensions (known as the Central African Copperbelt) is the richest copper-cobalt mineral province in the world, comparable with South Africa's Witwatersrand gold field and platinum-bearing Bushveld Complex. Deposits occur in a geological feature known as the Lufilian Arc that stretches some 500 kilometers from east to west and is about 150 kilometers wide. The Lumwana copper/uranium deposits lie in the middle of the arc and are 220 kilometers from the mines in Chingola and about 100 kilometers south of those in Kolwezi in the DRC. On the map Lumwana appears remote from "traditional" copperbelt geology. However, researchers have correlated Lumwana's geology with that of the copperbelt, despite the rocks being highly deformed and altered. During Lufilian geological times, minerals were remobilized and new minerals introduced, giving rise to significant mineralization of copper, cobalt, uranium, gold, silver, and minor metals. The geology of the Lufilian Arc has been extensively reviewed and new interpretations have significantly increased the potential for new discoveries.

Lumwana Mine - a Long Life Superlative

16. (SBU) Two substantial deposits on the Lumwana lease are being developed for surface mining. The Malundwe and Chimiwungo pits have a combined proved and probable sulfide ore reserve of 321 million tons at 0.73 percent copper and an inferred resource of 417 million tons at 0.60 percent copper. These test the low end of economic grades, but Lumwana's economics are based on the massive scale of the reserves and project. The pits also contain a limited quantity of oxide ore that is being stockpiled for future processing. Sulfide and oxide ores require different metallurgical processes and are stored and treated separately. Mine feasibility was determined at a copper price of \$1.20-\$1.50 per pound (copper is currently \$3.50 to \$4.00 per pound). In total, Lumwana hosts an in-situ resource of 14 billion pounds or 6.4 million tons of copper, as well as the uranium. Because of the low grades of mineralization, there has been no artisanal mining in the area.

Mining Operations at the Starting Block

17. (SBU) Mining operations started in April 2007 at the smaller Malundwe pit and reached primary sulfide ore at a depth of 20 meters. Current plans are to mine two pits over a 37-year life of mine at a rate of 20 million tons of ore per year, starting in September 2008. The first six years will yield 500,000 tons of concentrate equal to 170,000 tons of copper metal. All mining equipment is on site and the team was able to climb into the driver cabin of one of the 240-ton ore-load trucks. These Hitachi/Euclid trucks are massive and each weighs 200 tons, costs \$4 million and requires 2 megawatts of power. The giant tires have an external diameter of some three meters and cost \$65,000 each. Trucks are powered by diesel-electric motors, which allow for driving in the pit on diesel and for connecting to overhead electric trolley cables (trolley assist) when hauling ore out of the pit. Ore from the pit will be hauled to a primary crusher at the top of the ramp, reduced to minus 400 mm size in the crusher, and transported to the milling circuit on a 4.5-kilometer overland conveyor belt.

Processing - the Heart of the Operation

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18. (SBU) Lumwana will produce a final copper concentrate product containing 30 percent to 40 percent copper metal. The plant employs conventional processes that entail the reduction of mine ore to a size that will expose sulfide minerals to recovery agents. Lumwana has a five-year take-and-pay off-take agreement with the Chinese Chambishi smelter (55 percent) and the Glencore Mopani smelter (45 percent), both located in the traditional Zambian copperbelt. Both the smelters are currently under construction but the contract allows Lumwana to deliver and be paid as soon as production starts and concentrate is delivered to the smelters. Forty trucks per day will carry 1,200-1,400 tons of concentrate containing 32-40 percent metal to the smelters for conversion to metal. (Comment. Industry sources say that Mopani may have slowed/stopped construction on the smelter pending clarification of the impact of the new tax regime. End Comment.).

19. (SBU) Lumwana's process plant should be commissioned at the end of June, with first concentrate in September 2008. The estimated cost of the plant is \$408 million and it boasts a number of superlatives, namely the world's biggest semi-autonomous grinding mill (SAG mill) and a similarly rated ball mill. Both are driven by concentric gearless electric motors (similar to an electric generator), which draw 18 and 16 megawatts of power, respectively. Each drive unit weighs in at more than 300 tons and the fully loaded SAG mill weighs 6,000 tons and rests on a base comprising 60,000 tons of concrete.

Uranium Adds Value

110. (SBU) Equinox has completed feasibility and environmental assessment studies for the on-site treatment of discrete high-grade uranium orebodies. These occur in the footwall and hanging wall of the copper formation partially within the copper deposit pit limits. The study confirmed the viability of producing 2-million pounds of U308 concentrate or "yellow cake" per year for eight years at a plant cost of \$200 million and operating cost of \$16 per pound. Once the GRZ -- which has yet to implement a new national uranium mining policy -- approves the license to process and export uranium, and negotiations are completed for uranium off-take consistent with IAEA and NPT guidelines, Board approval for the project is expected by the end of September and production for mid-2010. The uranium process will also produce 15,000 tons per year of copper concentrate containing 50 percent metal. Credits from the sale of the copper should reduce uranium costs to \$11 per pound. The current price of U308 is \$59 a pound. (Comment. Harry Michael compared the Lumwana copper-uranium deposit to Shinkolobwe in the DRC and Olympic Dam in Australia. Shinkolobwe provided the material for the Manhattan project that produced the first atomic bomb. End Comment.).

Skills Training - a Local Imperative

¶11. (SBU) Zambia suffers from a chronic shortage of skilled and experienced mining personnel. The long life projected for Lumwana convinced management of the need to employ and train people from local communities in order to sustain a stable and productive work force. This was a difficult task because of the general lack of skills in nearby villages. Despite this, Michael stated that they now have a team of ten trainers, three each from Zambia and Tanzania, two from Ghana, and only two expatriates. He also said that the major percentage of future operators and artisans would be local hires and be trained locally and overseas. Trainee drivers from the villages are given three months intensive training, including 40-50 hours in the truck simulator. Michael said that with on-going experience, his drivers would equal operators anywhere

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in the world.

Social Programs - a License to Mine

¶12. (SBU) Most new mining ventures in Africa are expected to provide needed services and facilities to communities surrounding the operation. Generally these include direct and indirect involvement in and funding of projects such as the rehabilitation and building of roads, rail lines, power lines and plants, schools, clinics, community centers and sports fields. Mines are also required to provide and/or subsidize the services of doctors, nurses and teachers. These activities provide community (and government) acceptance and the so-called "social license to mine". Lumwana mine is building a whole new town with all expected facilities and amenities for employees and their families, and will also provide services to neighboring communities that source labor.

Government and Policy - Nationalization by Taxation

¶13. (SBU) The 1996 mining code and subsequent Development Agreements (DA) signed between the mines and the GRZ made Zambia a good country for exploration and investment. In view of booming copper-cobalt prices the government naturally wished to increase their share of these "windfall" earnings and notified industry of their intention to renegotiate fiscal conditions. Despite this, the government unilaterally and without consulting industry (management claims) introduced two changes this year: a new tax regime for mining activities that supersede the terms in the DAs, and a new mining and minerals act that effectively nullifies the existing DAs. Mining sources have said they are "waiting to see" what the statutory instruments that implement the new law look like as they have not yet been introduced. The launch of the new mining taxation code on April 1 was based on bad advice from the World Bank and the EU (companies claim), without industry consultation.

¶14. (SBU) The move is anticipated to earn the country a further \$415 to \$650 million in 2008 and more if the copper price continues upward. The new tax regime has imposed increases in royalties, new windfall, profits, and export levies, and prolonged the amortization of capital. One common comment by all Zambian mine management visited was that the legislation had created "unintended consequences", including the increase in mine taxes to over 60 percent of profits, compared to the 47 percent allegedly targeted by government. The severity of the new taxes and levies is dependent on the circumstances of each mine. Michael said that the poorly thought out structure of the system penalizes less profitable mines and that the new taxes could decrease Lumwana's life from 37 to 22 years and put a constraint on future investment.

Plans/Ideas for the Future - Pending Taxation Review

¶15. (SBU) Equinox and other mining companies have expressed concern about the implications of the new fiscal regime on future mine investment and expansion plans. Mine management is talking to government and Michael believes that the GRZ will adopt a pragmatic approach and modify the more severe aspects of the legislation. Lumwana's plans remain in place for the present. These include expanding exploration around the Lumwana lease area and elsewhere on the Copperbelt, implementing opportunities to increase mine output, improving transport logistics, and in the longer term considering on-site production of refined copper metal and U3O8 concentrate. Proposals include:

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- constructing a hydro-metallurgical plant to recover copper metal (add value and eliminate the need for a smelter)
- increasing mine production from the planned 20 million tons of ore per year (170,000 tons metal) to 35 million tons ore (300,000 tons metal) in five years
- evaluating a slurry pipeline versus a rail line to transport concentrate to Chambishi and Mopani smelters
- considering contributing to the construction of a rail line from Kitwe/Ndola via Kansanshi and Lumwana to the DRC and link with the Angola rail system.

Comment

¶16. (SBU) The significance of the Lumwana copper deposit is its location in a remote under-developed and under-explored region of Zambia close to the Angolan border. This successful green-field project proves the extent of mineralization in the Lufilian Arc and should serve to attract and open up this previously neglected area to further high-tech exploration and investment in infrastructure and services. Sixty-five kilometers to the east is First Quantum's Kansanshi mine, which also occurs in the Arc and hosts a substantial, relatively low-grade and complex copper/gold orebody. The two mines are gearing up to annually produce 240,000 tons of copper between them by mid-2009, and nearly 500,000 tons in the next five years. Their combined activity could serve as a hub for economic growth and transport in the region.

Appendix

¶17. (SBU) APPENDIX - Lumwana Resources

Copper Ore Reserves and Resources:

Sulfide Ore:		
Mining Pits	Million Tons	percent Copper
Malundwe Reserves	121	0.89
Resource	4.2	0.77
Chimwunga Reserves	200	0.62
Resource	413	0.60
Total Reserves	321	0.73
Resource	417	0.60
Oxide Ore:		
Reserves	9.6	0.69
Resource	3.6	0.42

In total, Lumwana hosts an in-situ resource of 14 billion pounds or 6.4 million tons of copper.

Major Mining Fleet Items:

- 27 X 200-ton hybrid diesel-electric Hitachi Euclid trucks each capable of carrying a 240-ton payload
- 7 X 518-ton Hitachi excavators/shovels with 27 cubic meter buckets capable of loading 4,000 tons of ore per hour
- 1 X 400 ton crane, which Michael said is the biggest in Africa
- 1 X truck simulator for driver training.

Final Pit Dimensions:

-- Malundwe 4.5 X 1.2 km to a depth of 250 meters and a stripping ratio of 7/1 (ratio of waste to ore mined)
-- Chimiwango 6.0 X 4.5 km to a depth of 650 meters and a stripping ratio of 5/1.

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Uranium Resources and Reserves:

	Ore(Mt)	U3O8	percent	U3O8(Mlbs)	Cu percent	Cu(Mt)
Total Lumwana	11.4	0.07	16.5	-	-	
In pit	5.7	0.10	12.5	0.9	55.1	

Lumwana Major Capital Items (\$millions)

Mining fleet	\$165
Copper plant	\$408
Uranium plant	\$200
Total	\$773

Martinez